

CLAIMS

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1/ A method of manufacturing a bowl of thermostructural composite material formed by fiber reinforcement densified by a matrix, the method being characterized in that comprises the steps consisting in:

- making a bowl preform (28) by winding a yarn, the preform having an axial passage (30) through its bottom;
- densifying the bowl preform by chemical vapor infiltration; and
- closing the passage by means of a plug (34).

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2/ A method according to claim 1, characterized in that a consolidated bowl preform is made prior to chemical vapor infiltration.

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3/ A method according to claim 1 or claim 2, characterized in that the consolidated bowl preform (28) is made by winding a yarn impregnated by a precursor for said material constituting the matrix, and by transforming the precursor by heat treatment.

4/ A method according to claim 3, characterized in that the consolidated bowl preform (28) is made by winding a yarn impregnated by a carbon precursor and by transforming the precursor.

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5/ A method according to claim 4, characterized in that the carbon precursor is selected from phenolic, furan, epoxy, and polyimide resins.

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6/ A method according to any one of claims 3, 4, and 5, characterized in that two consolidated preforms are made simultaneously by winding a shape on a mandrel (12) where the shape corresponds to that of two bowl outline portions joined rim-to-rim, and by cutting the resulting winding (22) in its middle portion.

- 7/ A method according to any one of claims 1 to 6, characterized in that the bowl preform is made from yarn that has no surface treatment to provide surface functions.
- 5 8/ A method according to any one of claims 1 to 7, characterized in that the bowl preform is made from a carbon yarn.
- 10 9/ A method according to any one of claims 1 to 8, characterized in that the bowl is subjected to high temperature purification and stabilization treatment.
- 15 10/ A method according to any one of claims 1 to 8, characterized in that the high temperature purification and stabilization treatment is performed on the consolidated bowl preform.
- 20 11/ A method according to claim 9 or claim 10, characterized in that the purification and stabilization treatment is performed at a temperature greater than 2200°C.
- 25 12/ A method according to any one of claims 1 to 11, characterized in that bowl preform densification is performed by forming a carbon matrix.
- 30 13/ A method according to any one of claims 1 to 12, characterized in that the plug (34) is made in two pieces (35, 37) that are assembled together so as to clamp onto the rim of the axial passage in the preform.
- 35 14/ A method according to any one of claims 1 to 13, characterized in that the passage (30) is closed by a plug (34) made of thermomechanical composite material.

15/ A method according to any one of claims 1 to 14, characterized in that it includes a step consisting in performing a final chemical vapor infiltration step after the passage (30) has been closed by the plug (34).

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16/ A method according to claim 15, characterized in that the final chemical vapor infiltration step comprises forming a ceramic matrix phase.

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17/ A method according to claim 16, characterized in that the ceramic matrix phase is made of silicon carbide.

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18/ A method according to any one of claims 1 to 17, characterized in that a protective coating is formed at least on the inside face of the bowl.

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19/ A method according to claim 18, characterized in that a protective coating is made out of pyrolytic carbon.

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20/ A method according to claim 18, characterized in that a protective coating is made out of silicon carbide.

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21/ A method according to any one of claims 1 to 20, characterized in that the inside face of the bowl is provided with a protective layer.

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22/ A method according to claim 21, characterized in that the protective layer is made of a thermostructural composite material.

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23/ A method according to claim 22, characterized in that a plurality of consolidated bowl preforms are densified simultaneously by chemical vapor infiltration.

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